

THE EFFECT OF HOME-SCHOOL COMMUNICATION ON TREATMENT INTEGRITY

by

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ABSTRACT

Federal policy and school psychology practice have recently increased advocacy for the use of evidence-based interventions. Treatment integrity is an important component of evidenced-based interventions and individuals who implement these interventions may encounter barriers to proper implementation. Performance feedback has been used as an effective way to improve treatment integrity for teachers, which has primarily used feedback regarding student outcomes and implementer adherence to intervention procedures. The purpose of the present studies was to consider the utility of home to school communication as a method of performance feedback regarding a student's response to a Daily Behavior Report Card (DRC) intervention targeting academic engagement in improving teacher treatment integrity levels. Results indicated that home-school communication in insolation might not be enough to promote high levels of teacher treatment integrity. Results also suggested that limited improvement in overall student academic engagement could be related to low to moderate levels of teacher treatment integrity, which provides additional support for the importance of implementation fidelity.

THE EFFECT OF HOME-SCHOOL COMMUNICATION ON TREATMENT INTEGRITY

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CHAPTER 1: INTRODUCTION

The reauthorization of the Individuals with Disabilities Education Act (IDEA) in 2004 has increased the focus on accountability in student services. Accountability, as defined within the context of IDEA, refers to the requirement and obligation of school districts and school personnel to provide all children with high quality, specially designed instruction to meet the needs of children with disabilities. Schools are held accountable for complying with IDEA mandates, using necessary and appropriate procedures to determine eligibility, and providing appropriate services. IDEA (2004) recommends the use of evidence-based interventions in the procedures to determine eligibility. A child's progress (or lack thereof) in response to these interventions may be used to determine the need for further evaluation or special education services. Adequate compliance and use of interventions as recommended by IDEA suggest that the interventions are to be implemented with *integrity*; that is, in the manner in which they were intended to be used as specified through relevant research.

Recognition of the importance of treatment integrity within federal legislation is reflected in the increased focus on treatment integrity in the school psychology (Sanetti, Gritter, & Dobey, 2011) and applied behavior analysis literatures (McIntyre, Gresham, DiGennaro, & Reed, 2007). Treatment integrity is defined as the extent to which an intervention is implemented as intended (Yeaton & Sechrest, 1981). Documentation of treatment integrity helps to ensure that outcomes can be directly linked to the treatment's effectiveness (Sanetti et al., 2011). Ensuring the intervention is implemented as intended also promotes experimental control in research trials, which works to suppress extraneous variables that could account for intervention effects. Controlling extraneous variables while also implementing an intervention with integrity supports the conclusion that the intervention itself produced observed changes.

Treatment integrity is not only important for researchers and practitioners, but also for individuals being trained to implement these interventions. Relying on others to implement an intervention is an integral part of school psychology practice. School psychologists often take an indirect service delivery role and, with this, someone other than the school psychologist implements the interventions, such as teachers and parents. Treatment integrity is particularly important here because these individuals may not be accustomed to or have prior training in completing the treatment procedures and processes. School psychologists are responsible for training teachers and parents to implement interventions, and research has demonstrated that issues with adherence to treatment procedures may arise with these treatment agents (Allen & Warzak, 2000; Gresham, 1989).

During implementation of interventions, there are numerous variables influencing adherence to treatment procedures, such as competing contingencies and skill acquisition deficits (Allen & Warzak, 2000). Competing contingencies include events that punish attempts at adherence or events that reinforce behaviors incompatible with adherence. During attempts to alter problematic behavior, there can be an initial escalation of the problem behaviors, referred to as an extinction burst, which may make it difficult for treatment agents to adhere to the treatment procedures (Allen & Warzak, 2000). Skill acquisition deficits may also occur for treatment agents due to a high level of skill complexity and inadequate instruction in the treatment procedures. Other potential influences include the complexity of the treatment itself, perceived and actual effectiveness, and treatment agent motivation (Gresham, 1989).

Given their potential to affect treatment integrity, it is important to consider these variables and ways to improve treatment integrity within intervention research and applied settings. Research has indicated that treatment integrity has increased when performance

feedback regarding (a) student outcomes or (b) an interventionists' own treatment integrity levels was given to teachers who served as the treatment agent (Noell, Witt, Gilbertson, Ranier, & Freeland, 1997; Witt, Noell, LaFleur, & Mortenson, 1997). Although studies have previously considered the influence of performance feedback regarding student outcomes on teacher treatment integrity, it is important to consider additional influential factors and to extend research that supports ways in which to improve treatment integrity. Such potential factors include home-school communication. Home-School communication through the use of interventions such as School-Home Notes and Daily Behavior Report Cards (Kelley, 1990; Volpe & Fabiano, 2013) has the potential to increase accountability for teachers by providing parents with information regarding student progress in an intervention, which may serve to increase treatment integrity. Therefore, the primary purpose of these studies is to assess whether home-school communication regarding student outcomes across settings will influence teacher treatment integrity in a multiple baseline single-case research design.

Evidence-Based Interventions

Under IDEA 2004, specifications for classification of specific learning disabilities include considering evidence regarding student response to evidence-based interventions. Evidence-based interventions are strategies that have demonstrated substantial and acceptable outcomes across multiple studies through (a) statistically significant effects in group experimental designs (Weisz & Kazdin, 2010), and (b) desired changes replicated across subjects, behaviors, or settings in single case designs. Evidentiary support through multiple studies documents the efficacy of an intervention to produce the intended and desired outcomes (Flay et al., 2005; Kratochwill & Shernoff, 2004). Support of an intervention's efficacy encourages its use in practice and allows for defensible and ethical service delivery in that the

intervention is appropriate for its intended purpose. The importance of evidence-based interventions in research and practice has been demonstrated in the development of task forces, such as the Task Force on Evidence-Based Interventions in School Psychology (2003). The purpose behind this task force was to guide professionals in the production and adoption of evidence-based interventions. The EBI Task Force established a manual that provides procedural and coding criteria to be considered when reviewing intervention research. The manual may be used to comprehensively evaluate various elements of intervention research, including research design, participants, primary and secondary outcomes, changes in outcomes produced by intervention phases, as well as implementation fidelity or treatment integrity. Each aspect of intervention research is given a rating of “weak evidence,” “promising evidence,” or “strong evidence,” which can provide support for an intervention’s utility. The EBI Task Force encourages the use of the coding manual and the critical evaluation of research supporting intervention efficacy and effectiveness. Once an intervention has been identified as being evidence-based using tightly controlled experimental or quasi-experimental designs (i.e., efficacy research), it is important to ensure the evidence is supported and maintained in practice where real-world settings and situations do not mimic methodologically austere research conditions (i.e., effectiveness research). This support and maintenance can potentially be accomplished by considering treatment integrity of those interventions implemented in practice. Adequate treatment integrity may increase the likelihood that the effects established through empirical research can be replicated in applied settings.

Treatment Integrity

Effectiveness, in conjunction with strength and integrity, influences the success of a treatment (Yeaton & Sechrest, 1981). The strength of an intervention refers to the probability

that an intervention will produce the intended outcomes, whereas integrity refers to the extent to which treatment procedures are followed and the treatment is implemented as intended (Yeaton & Sechrest, 1981). While adherence to treatment procedures is a salient feature of treatment integrity, research has noted other dimensions of treatment integrity in regards to delivery (Schulte, Easton, & Parker, 2009). These additional dimensions of treatment delivery include competence, exposure, quality, and program differentiation. Competence refers to the skill level with which the treatment is implemented and exposure refers to the frequency and duration with which the treatment is implemented. Quality considers qualitative variables such as enthusiasm or buy-in of the interventionist. Program differentiation is defined as the extent to which only predetermined treatment components are implemented. These components are interrelated and work together to establish treatment integrity levels. Each component must be adequately addressed to establish proper levels of treatment integrity.

Accurate and appropriate treatment integrity is also linked to the effectiveness of an intervention. More specifically, absence or lack of treatment integrity has potential to reduce intervention effectiveness, whereas high levels of treatment integrity promote effectiveness (Yeaton & Sechrest, 1981). Yeaton and Sechrest (1981) note that a strong and empirically supported intervention may be rendered ineffective if adequate adherence to treatment protocol is not maintained. Given this relationship, treatment integrity should be considered when evaluating the effectiveness of an intervention (Sanetti, Gritter, & Dobey, 2011). In their evaluation of treatment integrity of interventions found in educational settings (e.g., academic, behavioral, and social interventions) with children in school psychology literature between 1998 and 2005, Sanetti and colleagues (2011) found that only half of the studies included in the review (total $n = 223$) provided treatment integrity assessment data. Studies were included in the review

if they met all of three criteria: 1) Published between the years of 1995 and 2008, 2) All of the participants had to be younger than 19 years of age, and 3) The study must be experimental, including quasi-experimental, which allowed for conclusions regarding causal relationships. The researchers stated that this percentage was encouraging, but it also indicated that half of the studies might have made invalid conclusions regarding treatment effectiveness. The likelihood of making invalid conclusions should be an area of concern given the relationship between effectiveness and treatment integrity. Because treatment integrity influences an intervention's effectiveness and effectiveness is a central component of evidence-based interventions, it should, again, be considered of high importance for researchers and practitioners.

Although treatment integrity is important in research, it is also important for promoting positive outcomes for children. Interventions are aimed at improving multiple areas of a child's life, including academic performance and social behavior. Central to school psychology practice is the indirect service delivery model, wherein someone other than the school psychologist (e.g., teacher, parent) is responsible for implementing an intervention. As the consultant, the school psychologist must train a consultee to implement the intervention. Successful training requires that the consultee acquire and maintain necessary skills while being able to adapt and apply these skills to similar situations or problems. A successfully trained consultee will demonstrate the ability to implement an intervention as intended and in accordance with evidence-based procedures (Watson & Sterling-Turner, 2008). In documenting the extent to which consultation and training was successful, it is essential to consider the treatment integrity of those teachers and parents implementing interventions.

Consultees may not implement an intervention with sufficient integrity for a number of reasons. Gresham (1989) offers a discussion of influences on treatment integrity as it relates to

school consultation with teachers. Gresham identifies six factors within school consultation that are strongly related to treatment integrity. The factors presented by Gresham include (a) complexity of treatments, (b) time required to implement treatments, (c) materials/resources for treatments, (d) number of treatment agents required, (e) perceived and actual effectiveness, and (f) motivation of treatment agents. If an intervention is too complex, a teacher consultee may have difficulty maintaining the intervention and completing each of the necessary steps. The complexity of an intervention may also influence the acquisition of the skills required to implement the intervention. Relatedly, if an intervention is too time consuming, then treatment integrity may be adversely affected. Gresham notes that a frequent reason given by teachers for not implementing an intervention as planned is lack of time. Gresham also indicates that interventions, which require materials or resources that are not easily accessible or are outside what is available within a teacher's classroom, are likely to be implemented with poor integrity.

The number of treatment agents required to implement the intervention might also affect treatment integrity. Gresham discusses the use of School-Home Notes as an example. School-Home Notes and similar tools such as the Daily Behavior Report Card (DRC) involve the cooperation of both teachers and parents to track student behavior and provide the student with some form of feedback and reinforcement (Kelley, 1990; Volpe & Fabiano, 2013). (Specifics of the DRC intervention are presented in more detail in subsequent sections.) For the DRC intervention to be implemented as intended and produce desired effects, teachers and parents must both complete their requirements (Vannest, Davis, Davis, Mason, & Burke, 2010). With multiple treatment agents, there is potential for one interventionist to implement the treatment with a less than desirable level of integrity, which is likely to affect the overall effectiveness of the intervention. This potential influence of treatment integrity demonstrates the necessity of its

assessment, choosing an appropriate number of treatment agents, and monitoring those agents. Using the least number of appropriate treatment agents would work to decrease the complexity of the intervention and would lessen the chance of error in treatment implementation. Also, as with any intervention, it is important to assess the extent to which treatment agents are implementing the intervention as intended to promote treatment effectiveness.

The final two factors addressed by Gresham are particularly relevant to the present study. Motivation of the treatment agent also has the potential to influence treatment integrity levels. Teachers whose primary motivation is to remove a student from their classroom rather than providing remediation may implement a treatment with poor integrity. Lastly, perceived and actual effectiveness of the intervention can potentially influence the level of adherence to procedures by treatment agents. Gresham indicates that interventions perceived to be ineffective might be implemented with less integrity than those perceived as effective. Providing teachers with documentation on the progress and effects produced by an intervention can demonstrate the actual effectiveness. A way to potentially demonstrate this actual effectiveness may be to provide performance feedback of a student's response to an intervention. This feedback could provide teachers with concrete evidence that the intervention is adequately improving the student's targeted difficulties, whether they are academic or behavioral. As Gresham (1989) suggests, focusing on actual effectiveness may serve to promote treatment integrity. Research in the use of performance feedback as a way to demonstrate intervention effectiveness and promote treatment integrity is discussed further in the next section.

Performance Feedback

Two common methods of providing performance feedback found in educational settings involve providing information regarding student outcomes in response to an intervention or

implementer adherence to treatment procedures during an intervention (Witt et al., 1997).

Research has found that both approaches may increase teacher treatment integrity (Noell et al., 1997; Witt et al., 1997). Solomon, Klein, and Politylo (2012) recently conducted a meta-analysis of the effect of performance feedback on teachers' treatment integrity in single-case research. The purpose of this analysis was to examine the effect of performance feedback in school settings, as well as the effects of the varying characteristics of performance feedback. The researchers addressed five questions in their analysis: (1) How effective is performance feedback for different age groups? (2) What is the relative effectiveness of performance feedback with special education and general education teachers? (3) What is the relative effectiveness of performance feedback for different types of interventions? (4) How does delay of feedback affect the power of the intervention? and (5) How do the effects of experimental studies compare to that of quasi-experimental studies? Their analysis included 36 studies that met all six of the inclusionary criteria.

Solomon et al. (2012) chose to use two different effect size calculations for their analysis: ALLISON-MT (Mean Trend; Allison & Gorman, 1993) and the Improvement Rate Difference (IRD; Parker, Vannest, & Brown, 2009). The results of the analysis indicated that performance feedback generally produced significant changes in teacher integrity regardless of setting, dependent variable, delay of feedback, or type of intervention. Performance feedback was found to be effective in preschool through high school, which demonstrated that grade level was not a significant moderator of performance feedback when considered alone. Results also demonstrated that performance feedback produced some positive change in student performance. Additionally, the analysis indicated that performance feedback was more effective for special education teachers when compared to general education teachers. However, the authors noted

that although the difference was significant, performance feedback was still effective for both types of teachers.

With consideration of the type of intervention, performance feedback was generally found to be more effective for increasing the treatment integrity of academic interventions in comparison to behavioral interventions, but differences between the effect sizes used in the analysis produced conflicting results. When considering the ALLISON-MT effect size, performance feedback was found to be more effective for increasing treatment integrity in academic intervention than behavioral interventions. However, the IRD statistic demonstrated the opposite relationship between academic and behavioral interventions. Lastly, results of the analysis indicated immediate feedback and daily feedback produced similar effects on teacher behavior. Both types were found to have higher effects than weekly feedback, but the differences were not statistically significant. Overall, the results of the analysis demonstrated the effectiveness of performance feedback in improving treatment integrity across intervention targets, settings, and agents. Results also show the utility of various types of performance feedback, two of which are discussed next.

Solomon et al. (2012) referenced several potential moderators that were unanalyzed because they could not be analyzed using meta-analytic methods. Included in this discussion was the consideration of verbal versus graphic performance feedback. The authors refer to a study conducted by Sanetti, Luiselli, and Handler (2007), which did not meet the meta-analytic inclusionary criteria. The authors' purpose of the study was to evaluate the effectiveness of the two forms of performance feedback. Sanetti and colleagues (2007) used an A-B-BC-B-BC reversal type design to assess the effects of providing verbal performance feedback alone versus providing verbal and graphic feedback together on teacher integrity of the implementation of a

Behavior Support Plan (BSP). The B phase of the research design was the verbal performance feedback phase. Implementation of the phase began when treatment integrity levels fell below 80 percent of components implemented as written for three consecutive observation periods during baseline. Immediately following an observation, teachers were provided with the percentage of BSP components implemented as intended, corrective feedback of the components not implemented as intended, and an opportunity to ask the consultant questions. The BC phase of the research design was the verbal and graphic performance feedback phase. Again, implementation began when treatment integrity levels fell below 80 percent of components implemented as written for three consecutive observations during the verbal feedback phase. Immediately following the observations, teachers were provided with a graphic representation of the percentage of BSP components implemented as intended, corrective feedback of components not implemented as intended, and opportunities to ask questions.

Results of the study demonstrated that the percentage of BSP components implemented as intended were substantially higher during the verbal and graphic performance feedback phases than during the verbal feedback only phases. The average adherence during baseline was 72.3 percent, which decreased to an average of 42.9 percent during the first verbal feedback phase. Implementation of the first verbal and graphic feedback phase resulted in an increase to an average of 91 percent. Reversal back to verbal feedback resulted in a decreasing trend in percentage with an average of 49.2 percent. Reimplementation of the verbal and graphic feedback phase resulted in an immediate increase to an average of 87.2 percent. These results indicated that providing graphic performance feedback in conjunction with verbal feedback might be more effective than verbal feedback alone in increasing treatment integrity levels.

The Sanetti et al. (2007) findings also support the utility of providing performance feedback immediately following an observation period. However, research has shown support for using weekly performance feedback to improve teacher implementation of academic interventions. Mortenson and Witt (1998) assessed the efficacy of weekly performance feedback in improving treatment integrity of four elementary school teachers during pre-referral academic interventions. The authors identified four teachers who had referred students to a student support team for academic difficulties and four students who were found to have performance deficits through Can't Do/Won't Do assessment procedures. Treatment integrity for the academic interventions was documented by the percentage of intervention steps completed. This was assessed through review of permanent products, including student-completed and scored assignments, reward slips for students, and teacher-completed intervention summary forms. Following teacher training of intervention procedures, the research design included a "No Assistance" phase in which teachers implemented the intervention without help from the consultant/researcher. The performance feedback phase was initiated when treatment integrity levels remained consistently at or below 70%. Performance feedback consisted of a review of the percentage of intervention steps completed as well as review of student performance on academic assignments. Meetings were held weekly and involved the discussion of data, positive feedback for completed intervention steps, corrective feedback for incorrect completion or omission of steps, opportunities for questions, verbal commitment from teachers to implement the intervention as intended, a reminder to submit intervention summaries, and a reminder of the next meeting. The performance feedback phase was only initiated for 3 of the 4 teachers because one teacher held consistently high treatment integrity levels with a mean of 86%. The other three teachers obtained an average treatment integrity percentage of 48%, 61%, and 61% during

the No Assistance phase. Following the implementation of the Performance Feedback phase, percentages increased to 80%, 71%, and 79% respectively. The increase in percentage of intervention steps completed supported the use of weekly performance feedback. Mortenson and Witt note that although the increases in treatment integrity levels were not as large as those obtained in daily performance feedback studies, the results do provide preliminary support for weekly feedback.

The research base regarding performance feedback and the work completed by Mortenson and Witt (1998), Noell et al. (1997), and Witt et al. (1997) have focused primarily on academic interventions. The support for using performance feedback to promote treatment integrity levels of behavioral interventions is much less evident. Common behavioral interventions, such as School-Home Notes and DRCs, often incorporate some component of performance feedback, which should encourage the use of these interventions as targets of analysis in treatment integrity research. DRCs may be used to provide feedback to teachers, parents, and students regarding student performance and behavior (Vannest et al., 2010; Volpe & Fabiano, 2013). The DRC facilitates communication between teachers and parents and gives teachers the opportunity to provide frequent feedback to parents regarding their child's behavior (Volpe & Fabiano, 2013). They may also be used as an intervention to improve various student behaviors, including academic engagement and disruptive behavior (Volpe & Fabiano, 2013). DRCs are primarily used to obtain information regarding student behavior and to communicate this information to the student as well as the student's parent and teachers (Chafouleas, Riley-Tillman, Christ, & Kilgus, 2010). The purpose of this communication is to understand student behavior, which involves determining how well the behavior meets expectations. Communication of how well a student is meeting behavioral expectations to others can be

considered a form of performance feedback for the student's behavior. Additionally, using the DRC as a method of performance feedback for student behavior can be used to facilitate positive changes in the behavior.

Home-School Communication

While performance feedback is a large component of DRCs and has been shown to be effective in improving treatment integrity, other factors such as home-school communication may also be beneficial in the support of proper implementation. Home-school communication may work to support accountability for teachers. Under IDEA (2004), accountability requires school professionals to provide high quality, specially designed instruction for students and also provide appropriate services to those students. IDEA (2004) also requires teachers and schools to make data-based decisions as well as justify and report these decisions. The communication component of DRCs is direct way for teachers to provide support for the intervention and report student progress to parents. Cox (2005) suggests that interventions, such as DRCs, that incorporate home-school communication, facilitate parent involvement in education due to the ease with which information is transmitted. By holding teachers accountable for the intervention and using home-school communication, they may be more likely to implement the intervention as intended.

Home-school communication also has pragmatic advantages that may support treatment integrity. As noted above, home-school communication is built into the DRC intervention (Volpe & Fabiano, 2013), which eliminates the need to add additional components and thus creating more complexities. Furthermore, the DRC intervention is efficient in the use of home-school communication. The DRC does not require a school psychologist to review the data, summarize the information, and provide feedback to teachers. The DRC itself communicates

student progress from teachers to parents on a daily basis. The incorporation of home-school communication in DRC procedures and the efficiency of the communication may also positively influence treatment integrity. As Gresham (1989) noted, the complexity of an intervention may hinder proper adherence to treatment protocols.

Purpose of Research

Treatment integrity is an area of significant importance given the increased focus on accountability for student services, evidence-based interventions, and documentation of student response to interventions. It is essential that ways to improve treatment integrity for teachers be identified. Research has documented several factors that could affect treatment integrity levels for teachers. Performance feedback has received the most attention and research has demonstrated performance feedback regarding student performance and teacher treatment integrity to be effective in improving integrity levels for teachers. However, other factors such as home-school communication may also be beneficial. Presently, home-school communication has not been considered as a means for increasing treatment integrity. It is often incorporated into behavior interventions like the DRC and may support accountability, which seems likely to facilitate proper implementation. The primary purpose of the present studies is to consider the utility of home-school communication alone in improving teacher treatment integrity levels through the use of a DRC. It is hypothesized that increased communication between school and home regarding the progress of student behavior will result in improvements in treatment integrity levels for teachers.

CHAPTER 2: STUDY 1

Method

Participants and setting. Student participants were chosen based on referral for limited engagement. Limited engagement was defined as low active and passive engagement in the form of a lack of participation in classroom activities, difficulty maintaining attention to instructional materials, or difficulty listening to the teacher. Inclusion was based on baseline levels of engagement found to be below 80%, as rated by the teacher using a Direct Behavior Ratings (DBR). A cutoff score of 80% was chosen based on research conducted by Kilgus, Riley-Tillman, Chafouleas, Christ, and Welsh (2014) and Chafouleas et al. (2013), which suggests a cut score of 80% or a DBR-SIS rating of 8 for academic engagement is appropriate for determining need. Student participants who had recently or were currently receiving an intervention similar to a DRC for academic engagement were excluded. No other exclusionary or inclusionary criteria were used in selecting participants.

One student participant, parent participant, and teacher participant were used during Study 1. The student participant, Student 1, was a 7-year-old African American male, who was in the first grade. The parent participant, Parent 1, was an African American female and was the mother of Student 1. The teacher participant, Teacher 1, was a Caucasian female and was Student 1's primary first grade teacher. Study 1 took place in Teacher 1's classroom at a southeastern elementary school and in the home of Parent and Student 1.

Research design. Study 1 consisted of a three-phase design with the designation of A-B-C. Due to the formative nature of Study 1, each phase was brief with 3 data points per phase. Phase A consisted of the initial baseline data-collection period of student academic engagement with no treatment. Phase B consisted of a DRC being completed individually at both home and

school by Parent 1 and Teacher 1 without sending the DRC across settings. Phase B also served as the baseline for treatment integrity levels of Teacher 1 and Parent 1. Phase C introduced sending the DRCs across settings as part of the home-school communication condition.

Direct behavior ratings.

Student behavior. Direct Behavior Ratings (DBRs) were used to monitor student behavior on a daily basis across phases. DBRs have been found to demonstrate significant convergence with systematic direct observation (SDO) when considering inter-rater reliability and criterion-validity, particularly for the assessment of student academic engagement (Christ, Riley-Tillman, Chafouleas, & Jaffery, 2011). Additionally, Briesch, Chafouleas, and Riley-Tillman (2010) found that DBRs and SDO are equally sensitive to intra-individual differences in academic engagement. The target behavior for Study 1 was student academic engagement. Academic engagement consisted of two components: active and passive engagement (Shaprio, 2010). Active engagement included behaviors such as writing, raising a hand, and talking to the teacher about classroom activities. Passive engagement included behaviors such as listening to the teacher, reading class material, and looking at class material (Shaprio, 2010). Teacher 1 and Parent 1 first documented initial levels of student engagement to establish a baseline (Phase A). Teacher 1 and Parent 1 used a DBR Single-Item Scale to rate student engagement. The DBR form contained an area to document the date, day of the week, student, and the rater. The raters were also required to give a description of the activity, and to document the start and end times of the observation period. The DBR form also contained a behavior description for student engagement based on Shapiro's (2010) definition. The rating scale required Teacher 1 and Parent 1 to rate the student behavior on a scale from 0 to 10 based on the percentage of time Student 1 spent performing the behavior during the observation period(s). Zero was equal to 0

percent of time and 10 was equal to 100 percent of the time. Teacher 1 and Parent 1 were instructed to continue monitoring Student 1's behavior in Phases B, and C of the research design. Examples of the DBR forms used can be found in the appendix.

Treatment integrity. DBRs were also used to assess treatment integrity for Parent 1. The assessment tool was modified from the model treatment integrity assessment form produced by Sanetti, Chafouleas, Christ, and Gritter (2009). Parent 1 completed the assessment form, which contained questions that required the evaluation of their level of adherence to treatment procedures, how competent they felt in implementing the intervention, as well as the quality of implementation. Treatment integrity levels were assessed in Phases B and C of the research design and was documented daily. Teacher treatment integrity was measured using systematic direct observation. The researcher documented the extent to which Teacher 1 completed each intervention step as well as the quality of teacher implementation. Direct observations occurred twice a day for 30 minutes at the beginning and end of the school day during each phase to ensure each intervention step was observed. Steps of the intervention included: 1) Discuss the DRC with the student at the beginning of the day, 2) Observe the student's behavior during each specified time period, 3) Document the percent of time the student was academically engaged immediately following each observation, 4) Discuss the student's behavior at the end of the day, 5) Praise the student for correct self-evaluation, 6) Praise the student for engaging in appropriate behavior, 7) Provide the student with corrective feedback for inappropriate behavior, 8) Determine if the student's goal was met, 9) Provide reinforcement/reward for met goal, and 10) Send the DRC home with the student.

Procedure.

Training. For Study 1, the researcher met with Teacher 1 for 30 minutes during her planning after receiving informed consent from Parent 1 and written assent from Student 1. Due to transportation difficulties, it was determined that phone conferences would be the mode of communication with Parent 1. As a result, the researcher sent home a folder containing the necessary forms for data collection, which were separated by day, and a detailed list of instructions for each phase of the research design. For Parent 1, training was conducted over two twenty minute phone conferences.

To complete the DBRs, Teacher 1 and Parent 1 were instructed on the target behavior and the definition that was used (i.e., academic engagement). They were instructed that during those activities that are most problematic or during homework, they were to observe Student 1's behavior. For Teacher 1, the most problematic time period was determined to be carpet time, which occurred three times daily and was spread throughout the day. Following each carpet time session, Teacher 1 was instructed to rate Student 1's behavior on a scale from 0 to 10 based on the amount of time he engaged in the desired behavior. At home, Parent 1 was instructed to complete observations during the time in which Student 1 completed his homework. Parent 1 was instructed to rate Student 1's behavior on a scale from 0 to 10 based on the amount of time he was engaged while completing his homework.

During training, Teacher 1 and Parent 1 were instructed on how to complete the DRCs. The DRCs share similar procedures to the DBRs, but were to be completed throughout the course of the day or throughout homework time. First, Teacher 1 was told to discuss the DRC with Student 1 at the beginning of each day. Next, Teacher 1 was instructed to observe Student 1's level of academic engagement during each instructional period. Teacher 1 was also instructed to rate Student 1 on the four engagement-related behaviors immediately following

each instructional period on a 0 to 2 scale. At the end of each school day, Teacher 1 was instructed to discuss the DRC with Student 1. During the discussion, Teacher 1 was told to ask Student 1 how he thought he performed and was told to praise him for correct self-evaluation. Teacher 1 was also instructed to praise Student 1 for appropriate behaviors and provide corrective feedback for any inappropriate behaviors. Following the discussion, Teacher 1 was instructed to determine if Student 1 met his daily point goal for school and then provide a reward if the goal was met. Lastly, Teacher 1 was instructed that during baseline data collection days (Days 1-4), she was to complete the DRC without discussing the results with Student 1. During Phase B (Days 5-7), Teacher 1 was instructed to begin discussing the DRC with Student 1, but was not to send the DRC home. During Phase C (Days 8-10), Teacher 1 was to begin sending the DRC home with the student.

Similar training procedures were conducted with Parent 1. Via phone conferences, Parent 1 was first instructed to discuss the DRC with Student 1 before the start of homework. Next, Parent 1 was told to observe Student 1's behavior while he completed his homework. Immediately following homework completion, Parent 1 was instructed to rate Student 1 on four engagement-related behaviors on a 0 to 2 scale. After behaviors were rated, Parent 1 was instructed to discuss the results of the DRC with Student 1. During the discussions, Parent 1 was instructed to praise Student 1 for correct self-evaluation and appropriate behaviors. Parent 1 was also told to provide Student 1 with corrective feedback for any inappropriate behavior. After the discussion, Parent 1 was instructed to determine if Student 1 met his at home behavior goal and provide a reward if the goal was met. Lastly, Parent 1 was instructed not to discuss the DRC with Student 1 during baseline (Days 2-4). During Phase B (Days 5-7), Parent 1 was told to

begin discussing the DRC with Student 1, but also told not to send the DRC to school. During Phase C (Days 8-10), Parent was to begin sending the DRC to school for Teacher 1.

Baseline data collection. Initial levels of Student 1's behavior were assessed using DBRs. At school, DBR-SIS data was collected during 3 carpet time sessions occurring throughout the day, which was the time periods determined to be most problematic by Teacher 1. These observation periods remained the same throughout the intervention.

Due to difficulties in scheduling phone conferences with Parent 1 for training, Teacher 1's baseline was extended to a fourth data point to ensure phases changes occurred at the same time for both Teacher 1 and Parent 1. At school, an average daily DBR score was used because Student 1's behavior was rated over three carpet time sessions.

Daily behavior report card. The DRC included a space for the date, student name, and rater name. The DRC contained a table with the desired behaviors related to academic engagement and the time periods at either home or school in which Student 1's behavior was being observed. At school, engagement related behaviors included (1) raised his hand to talk, (2) talked only about classroom activities, (3) listened during classroom activities, and (4) kept his eyes on classroom materials. These behavior were rated throughout the entire day and the day was broken down into six time periods: 1) 8-8:30am, 2) 8:30-9:50am, 3) 10:40-11:20am, 4) 12-12:45pm, 5) 12:45-1:40pm, and 6) 2:10-2:40pm. The time periods from 9:50-10am, 11:20am-12pm, and 1:40-2:10pm were not included because these were the time periods for Specials, Lunch, and Recess, respectively. At home, engagement related behaviors included (1) kept his attention on his homework, (2) listened to others, (3) participated in the homework activity, and (4) engaged in conversation related to the homework. These behaviors were rated during homework time. Each observation period box included a "0," "1," and "2," which indicated no

demonstration of the skill, partial demonstration of the skill, and full demonstration of the skill respectively. No demonstration of the skill indicated that the student engaged in the desired behavior 0% of the observed time. Partial demonstration of the skills indicated that the student engaged in the behavior approximately 50% of the observed time. Full demonstration of the skill indicated that the student engaged in the desired behavior approximately 100% of the observed time. Teacher 1 and Parent 1 were instructed to rate the engagement related behaviors immediately following each observation period.

The DRC also contained spaces for Teacher 1 and Parent 1 to document the total points, the goal, whether the goal was met, and the reward chosen by Student 1. Below the table were spaces designated for teacher and parent signatures. The researcher, Teacher 1, and Parent 1 collaboratively determined student behavioral goals at home and school. Goals were determined based on points obtained during baseline. At home, four behaviors were rated over homework with a range of 0 to 8 possible points. Student 1's at home goal was determined to be a total of 6 points (75% of possible points). At school, four behaviors were rated over six activities with a range of 0 to 48 possible points. Student 1's at school goal was determined to be a total of 10 points (21% of possible points). Student rewards for obtaining performance goals at home and school were also discussed with Student 1, Parent 1, as well as Teacher 1. Rewards used at home included a special snack, extra time outside, and a trip to the park. Rewards used at school included computer time, school supplies (e.g., pencil, folder, eraser), or candy.

Home-school communication. The DRCs were not sent across settings until Phase C of the research design. Parent 1 and Teacher 1 were informed to begin sending the DRC across settings on Day 8 of the research design. If Student 1 met their daily goal at school, Teacher 1 was instructed to reward the student's behavior with an agreed upon reinforcer at the end of each

day. If Student 1 met their daily goal at home, Parent 1 was instructed to reward the student at home. During Phase C, Teacher 1 was instructed to send their DRC home with the student for parent viewing and signature and Parent 1 was instructed to send their DRC to school with the student for teacher viewing and signature.

Treatment integrity for phases B and C. Parent treatment integrity was assessed throughout Phases B and C of the research design using forms created by the researcher based on the model treatment integrity assessment form produced by Sanetti et al. (2009). The treatment integrity forms were completed daily by Parent 1 following the completion of the DRC. In responding to the questions addressing the level of adherence to treatment procedures, Parent 1 was instructed to identify if they completed each procedure step of the intervention by answering “Yes,” “No,” or “No Opportunity.” For Phase B of the research design, Parent 1 was instructed to mark “No Opportunity” for the step that require sending the note to school, as this was delayed until Phase C.

To answer the question addressing the level of interventionist competence, Parent 1 was to rate their level of competence using a DRC. Competence was defined as the extent to which the interventionist understands the procedures involved with the intervention (i.e., the Daily Behavior Report Card). The scale ranged from 0 to 10, with 0 representing no competence, 5 representing some competence, and 10 representing complete competence. Parent 1 was also asked whether they implemented the Daily Behavior Report Card reinforcement component enthusiastically. Providing feedback and rewards enthusiastically included the display of positive affect and the use of praise. This was rated using a 6-point Likert Scale in which 1 = Strongly Disagree, 2 = Disagree, 3 = Slightly Disagree, 4 = Slightly Agree, 5 = Strongly Agree, and 6 = Strongly Agree. A rating of 1 (Strongly disagree) was representative of no enthusiasm

used and the presence of negative affect. A rating of 2 (Disagree) was representative of no enthusiasm. A rating of 3 (Slightly disagree) represented the display of no affect when providing reinforcement. A rating of 4 (Slightly agree) represented the display of some positive affect. A rating of 5 (Agree) was representative of some enthusiasm and positive affect. Lastly, a rating of 6 (Strongly agree) represented overly enthusiastic behavior and positive affect. The researcher collected completed treatment integrity forms following the completion of each phase. It should be noted that although parent treatment integrity data was collected, it was ultimately not analyzed or interpreted due to inconsistent collection and unreliable reporting of integrity levels.

Teacher treatment integrity was assessed using systematic direct observation conducted by the researcher. Teacher 1 was observed 2 times a day throughout Phases B and C. One observation occurred at the beginning of the day and the other occurred at the end of the day. These observation periods were chosen to ensure each intervention step was observed and that at least one carpet time session was observed. The researcher used the same modified form that was completed by Parent 1, but competence was not included. The researcher documented the teacher's level of adherence by identifying if they completed each procedure step of the intervention by indicating "Yes," "No," or "No Opportunity." The researcher also documented the quality of intervention implementation by rating the extent to which the teacher provided feedback and rewards enthusiastically using the previously mentioned 6-point Likert Scale.

Interobserver agreement for phases B and C. A second observer was used to assess interobserver agreement (IOA) for the researcher's observations of teacher implementation. The second observer was trained on the intervention and observation procedures. First, the second observer was presented with a checklist of intervention steps and was instructed to mark a "Yes," "No," or "No Opportunity" for each step following the observations. The second observer was

then told to observe Teacher 1 at the beginning of the day to document if the DRC was discussed with Student 1. Next, the second observer was instructed to determine if Teacher 1 was observing Student 1's behavior during the first instructional period (8-8:30am). Following the completion of the first instructional period, the second observer was instructed to document if Teacher 1 rated Student 1's behavior. Next, the second observer was told to observe Teacher 1 during the last instructional period of the day (2:10-2:40). The second observer was told to document if Teacher 1 praised Student 1 for correct self-evaluation and engaging in appropriate behaviors. The second observer was also told to document if Teacher 1 provided corrective feedback for inappropriate behaviors. Then the second observer was instructed to document if Teacher 1 determined if Student 1 met his at school behavior goal and provided a reward for a met goal. Next, the second observer was instructed that during Phase C to document if Teacher 1 sent the DRC home with Student 1. Lastly, the second observer was instructed to rate Teacher 1 on quality of implementation using the 6-Point Likert scale. The second observer was then told what each point on the scale represented using the aforementioned criteria. These individual observations and ratings took place once during Phases B and C, which resulted in the examination of IOA during approximately 33% of the researchers observations. IOA was calculated by dividing the number of agreements by the sum of agreements and disagreements. IOA was 100% for both observations.

Results

Teacher and teacher-reported student results of Study 1 are as follows. Figure 1 represents teacher reported DBRs for student engagement. Using visual inspection, Phase A or baseline demonstrated an initial low level of student engagement with some variability and an increasing trend. Upon implementation of the DRC or Phase B, DBR data demonstrated a

moderate change in level with a continuation of the increasing trend. Phase B also reflected a decrease in variability of student's DBR ratings. Phase C, which began the communication component of the research design, exhibited an immediate decrease in the level, but scores returned to a moderate level similar to Phase B with an increasing trend across the three days.

Figure 1

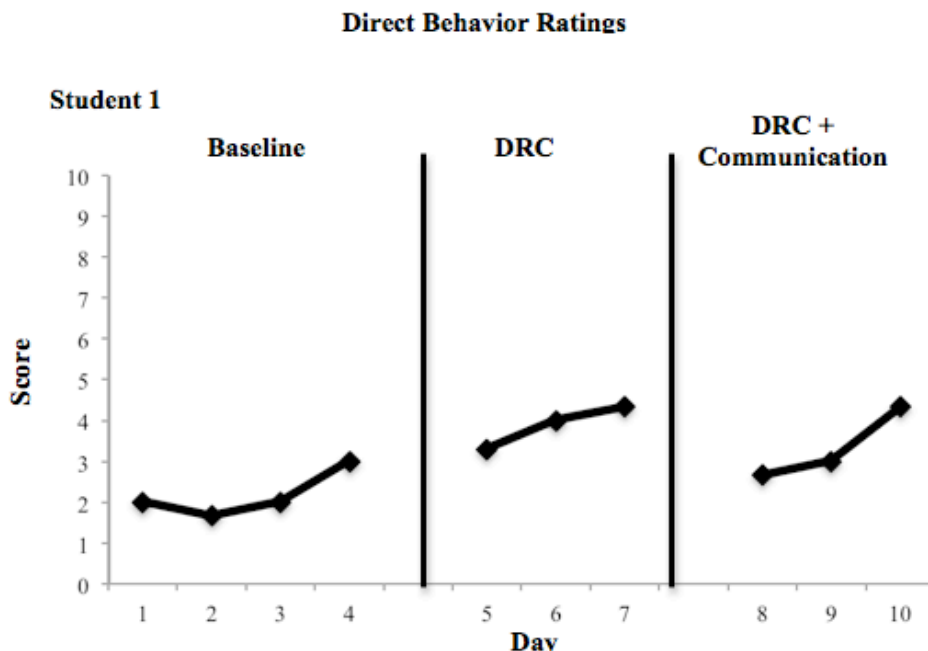


Figure 2 represents points received on the DRC. Scores are presented as the daily point total received out of a possible 48 points across four behaviors and six class periods. Again using visual inspection, baseline reflected an initial low level of obtained points with limited variability. Implementation of the intervention resulted in an immediate increase to a moderate level of obtained points, but also resulted in increased variability. Phase C of the research design resulted in a decrease in scores to levels similar to that of baseline. Phase C also demonstrated a decrease in variability.

Figure 2

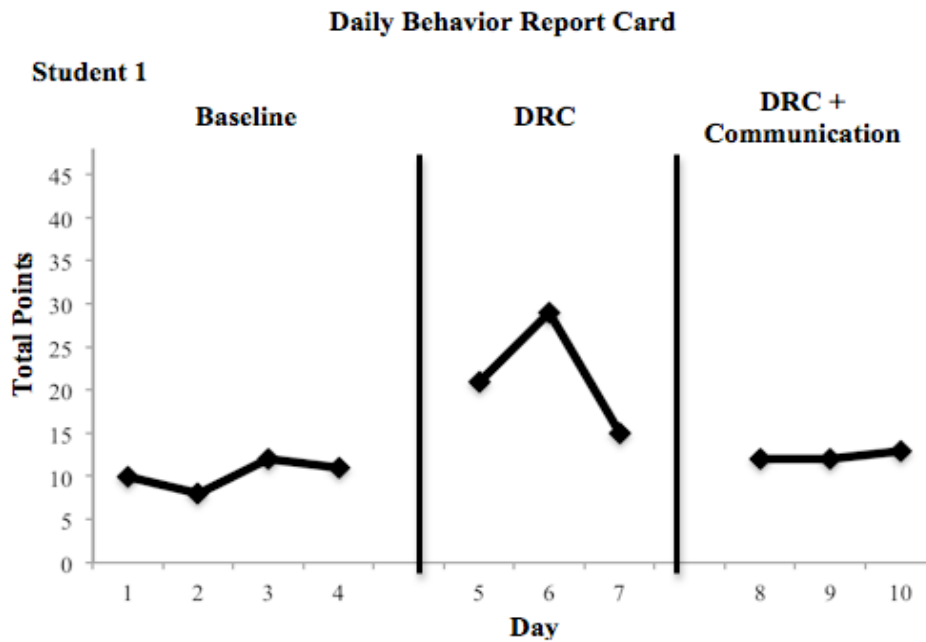
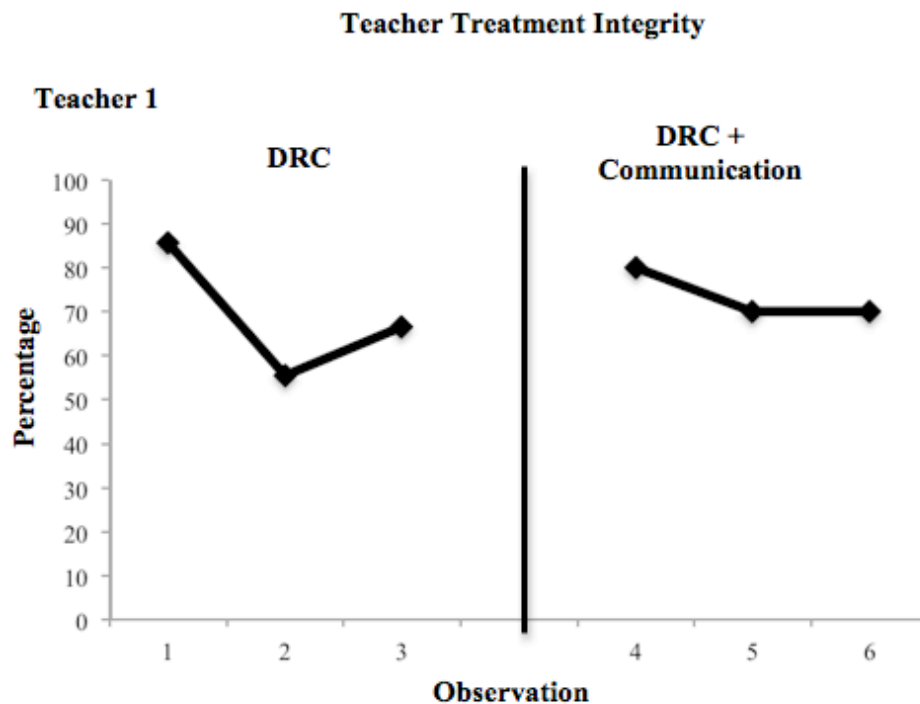


Figure 3 reflects teacher treatment integrity data collected during Phase B and C of the research design in which Phase B serves as baseline. Scores are presented as the percentage of intervention steps completed as intended. Through visual inspection, Phase B showed an initial moderate level of teacher treatment integrity with some variability. It should be noted that the observer had no opportunity to observe of the first intervention step for the first day of observations, which resulted in a lower number of possible intervention steps to be completed by the teacher. As a result, the first data point may be somewhat of an overestimate of teacher treatment integrity. Implementation of the home-school communication component resulted in a moderate increase in level and a decrease in variability among the scores.

Figure 3



The Improvement Rate Difference (IRD) effect size was also computed for teacher treatment integrity levels. IRD is calculated by subtracting the improvement rate of baseline from the improvement rate of the intervention phase. Improvement rates (IR) are a ratio of the number of improved data points to the total number of data points. The IR of baseline is 1/3 and the IR of the intervention phase of 3/3. IRD was calculated as $[(3/3) - (1/3)]$, which resulted in an effect size of .66. In reference to the IRD effect size benchmarks suggested by Parker et al. (2009), this demonstrated a moderate effect (moderate range .50 to .70). Lastly, the researcher and second observer consistently recorded a rating of 4 (Slightly Agree) throughout Phase B and C of the research design for the teacher's quality of implementation.

CHAPTER 3: STUDY 2

Method

Participants and setting. Student participants were also chosen based on referral for limited engagement. The same inclusionary and exclusionary criteria used in Study 1 were used for Study 2. Two student participants and two teacher participants were included in Study 2. One student participant, Student 2, was also a 7-year-old African American male and was in the first grade. The second student participant, Student 3, was a 10-year-old African American male and in the third grade. Teacher 2, was a Caucasian female and was Student 2's primary first grade teacher. The second teacher, Teacher 3, was also a Caucasian female and was Student 3's primary third grade teacher. Study 2 took place in Teacher 2 and 3's classrooms at a southeastern elementary school.

Research design. Study 2 also consisted of a three-phase design. For Teacher 2 and 3, the design designation was A-B-C. Phase A was again the initial baseline data-collection period. Phase B consisted of a DRC being completed at school only as parent participants were not included in Study 2. Phase B also served as the baseline for treatment integrity levels of Teacher 2 and 3. Phase C introduced sending the DRC home as the home-school communication condition. Phase changes were determined based on teacher treatment integrity levels. Phase changes occurred if treatment integrity levels consistently (i.e., over 3 observation) fell at or below 75%. This was based on the percentages used in previous treatment integrity research conducted by Soloman et al. (2012) and Mortenson and Witt (1998).

Direct behavior ratings.

Student behavior. DBRs were also used to monitor student behavior on a daily bases across phases during Study 2. The target behavior remained student academic engagement

using both active and passive engagement components identified by Shaprio (2010). Teacher 2 and 3 first documented initial levels of student engagement to establish a baseline (Phase A) using a DBR-SIS. Forms used by Teacher 2 and 3 were the same as those used during Study 1. Teacher 2 and 3 were also instructed to continue monitoring Student 2 and 3's behavior in Phases B and C of the research design.

Treatment integrity. Treatment integrity levels of Teacher 2 and 3 were assessed in Phases B and C of the research design using systematic direct observation. Again, the researcher documented the extent to which Teacher 2 and 3 completed each intervention step as well as the overall quality of implementation. Direct observations occurred twice a day for 30 to 60 minutes at the beginning and end of the school day during each phase to ensure each intervention step was observed. Overall, intervention steps remained the same as those discussed in Study 1; however, an 11th step was added that required the teachers to discuss the ratings with the students following each observation period. This step was included to help enhance the overall effectiveness of the intervention by increasing formative feedback for students.

Procedure.

Training. For Study 2, the researcher met with Teacher 2 and 3 individually during their planning periods for 30 minutes after receiving informed consent for the students' guardians and written assent from the student participants. To complete the DBRs Teacher 2 and 3 were instructed on the target behavior and the definition that was used. They were instructed that during those activities that were most problematic, they were to observe Student 2 and 3's behavior. For Teacher 2, the most problematic time period was determined to be independent work, which occurred three times daily for reading, mathematics, and writing and was spread throughout the day. For Teacher 3, the most problematic time period was determined to be

during English Language Arts instructional time. The instructions used to explain DBR and DRC ratings to Teacher 1 were used for Teacher 2 and 3, but the instruction to discuss the ratings with the students following each DRC observation period was added. Teacher 2 and 3 were instructed to complete the DRC without discussing the results with Student 2 and 3 during baseline data collection (Phase A). During Phase B, Teacher 2 and 3 were then instructed to begin discussing the ratings with the students, but were instructed not to send to DRC home. During the third phase (Phase C), Teacher 2 and 3 were to begin sending the DRC home with Student 2 and 3.

Baseline data collection. Initial levels of Student 2 and 3's behavior were also assessed using DBRs. For Student 2, DBR-SIS data was collected during 3 independent work sessions occurring throughout the day, which were the time periods determined to be most problematic by Teacher 2. Also for Student 2, an average daily DBR score was used. For Student 3, Teacher 3 collected DBR-SIS data during English Language Arts instruction, as this was the time period determined most problematic.

Daily behavior report card. The DRCs used for Student 2 and 3 were similar to that used for Student 1. For Student 2, engagement related behaviors included (1) Stayed in seat, (2) Raised hand to talk, (3) Talked only about classroom activities, (4) Listened during classroom activities, and (5) Kept eyes on class materials during assignments and activities. These behaviors were rated throughout the day and the day was broken down into 5 time periods: 1) 8-8:45am, 2) 8:45-10am, 3) 10-10:20am, 4) 11:30-11:50am, and 5) 12:30-2:20pm. The time periods from 10:20-11:30am and 11:50am-12:30pm were not included because these were the time periods for Lunch, Recess, and Specials. For Student 2, five behaviors were rated over five activities with a range of 0 to 50 possible points. Student 2's school goal was initially

determined to be a total of 15 points (30% of possible points). Student 2 consistently met this goal during Phase B so the goal was increased to a total of 22 points (44% of possible points) at the start of Phase C. Student 2's rewards for obtaining the performance goal at school was discussed with Teacher 2, Student 2, and his guardian. Rewards used at school included stickers, pencils, and erasers.

For Student 3, engagement related behaviors included (1) Wrote down assignments and activities, (2) Raised hand to talk, (3) Talked only about classroom activities, (4) Listened during classroom activities, and (5) Kept eyes on class materials during assignments and activities. These behaviors were also rated throughout the day and the day was broken down into 5 time periods: 1) 8-8:50am, 2) 8:50-10:30am, 3) 10:30-11:10am, 4) 12:30-2pm, and 5) 2-2:50pm. The time period from 11:10-12:30 was excluded because this was the time period for Lunch and Recess. The time period for Specials (10:30-11:10am) was included as the request of Teacher 3. For Student 3, five behaviors were rated over five activities with a range of 0 to 50 possible points. Student 3's school goal was determined to be a total of 28 points (56% of possible points). Student rewards were also discussed with Teacher 3, Student 3, and his mother. Rewards used at school for Student 3 also included stickers, pencils, and erasers.

Home-school communication. The DRCs were not sent home until the third phase of the research design. If Student 2 and 3 met their daily goals at school, Teacher 2 and 3 were instructed to reward the students' behavior with an agreed upon reinforcer at the end of each school day. During the third phase of the research design, Teacher 2 and 3 were instructed to send the DRCs home with the students for their parent or guardian to view, sign, and return the next day.

Treatment integrity for phase B and C. Teacher treatment integrity was assessed using systematic direct observations conducted by the researcher. Teacher 2 and 3 were observed 2 times a day for three days each during Phase B. Only one observation took place for Teacher 2 during Phase C as the student was moved out of district. For Teacher 3, five observations took place during Phase C. The same treatment integrity observations procedures used during Study 1 were used for Teachers 2 and 3.

Interobserver agreement for phases B and C. A second observer was used to assess IOA for the researcher's observations of teacher implementation during Study 2. The same training procedures were used to train the observer for Study 2. For Teacher 2, observations for the first and last instructional periods of the day took place during 8-8:45am and 2-2:30pm. For Teacher 3, observations took place during 8-8:50am and 2-2:50pm. The observations took place once per phase for Teacher 2, which resulted in IOA for approximately 33% of the researchers observations for Teacher 2. Again, IOA was calculated by dividing the number of agreements by the sum of agreements and disagreements. IOA for Teacher 2 was 100%. The observations took place once during Phase 2 and twice during Phase 3 for Teacher 3, which resulted in IOA for 33% of the researchers observations in Phase 2 and 40% of the researchers observations in Phase 3. The average IOA across the two phases was 95.45% for Teacher 3.

Results

Results are based solely on visual inspection. IRD effect sizes for teacher treatment integrity levels were considered, but not calculated due to insufficient data. Teacher and teacher-reported student results of Study 2 are as follows. Figure 4 represents teacher-reported DBRs for student academic engagement on a scale from 0 to 10. Scores for Student 2 are presented as the average across three ratings for independent work. Visual inspection indicated that baseline for

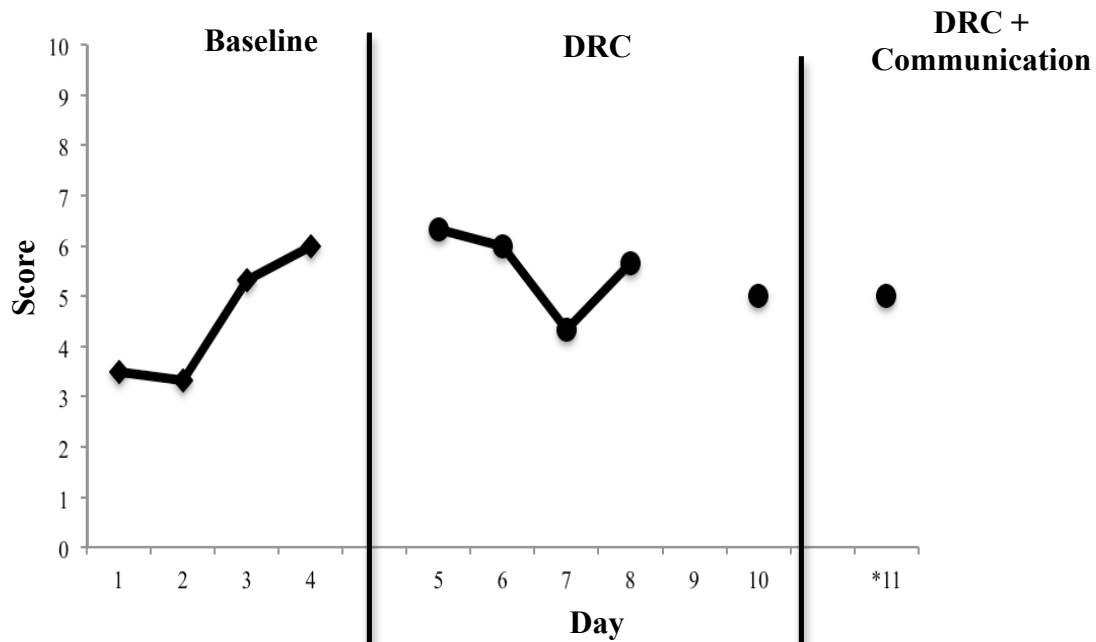
Student 2 demonstrated an initial moderate level of overall student engagement with an increasing trend. Following the implementation of the DRC, Student 2's DBR data demonstrated a small increase in level. DBR data in Phase B also demonstrated a decreasing trend and an increase in variability. It should be noted that data from Day 9 was not obtained as Student 2 was on a field trip and the teacher did not complete a DBR for that day. Following the start of Phase C, Student 2 was suspended for two days and subsequently left the school district. The available data point for Phase C indicated no change in level from that found in Phase B. It should also be noted that Day 11 for Student 2 was a half-day for students due to parent-teacher conferences and only one of the independent work sessions were conducted that day. Also, due to limited data available for Phase C for Student 2, visual inspection of trend and variability was unable to be conducted.

Visual inspection of Student 3's DBR data also indicated that baseline demonstrated an initial moderate level of overall academic engagement during ELA instruction. Data also demonstrated a slight increasing trend with some variability. Following the implementation of the DRC, Student 3's DBR data demonstrated a small decrease in level with a decrease in variability. After the introduction of the communication condition, data demonstrated a slight increase in level with no trend, but demonstrated an increase in variability. Days 9 and 11 for Student 3 were also half days. Day 9 was the half-day for parent-teacher conferences. A 2-hour delay for the school district occurred on Day 11 for Student 3 and this day was also double Specials for Student's 3's classroom in which they attended two Specials classes instead of the usual one. In consultation with Teacher 3, we considered this a half-day for instructional time.

Figure 4

Direct Behavior Ratings

Student 2



Student 3

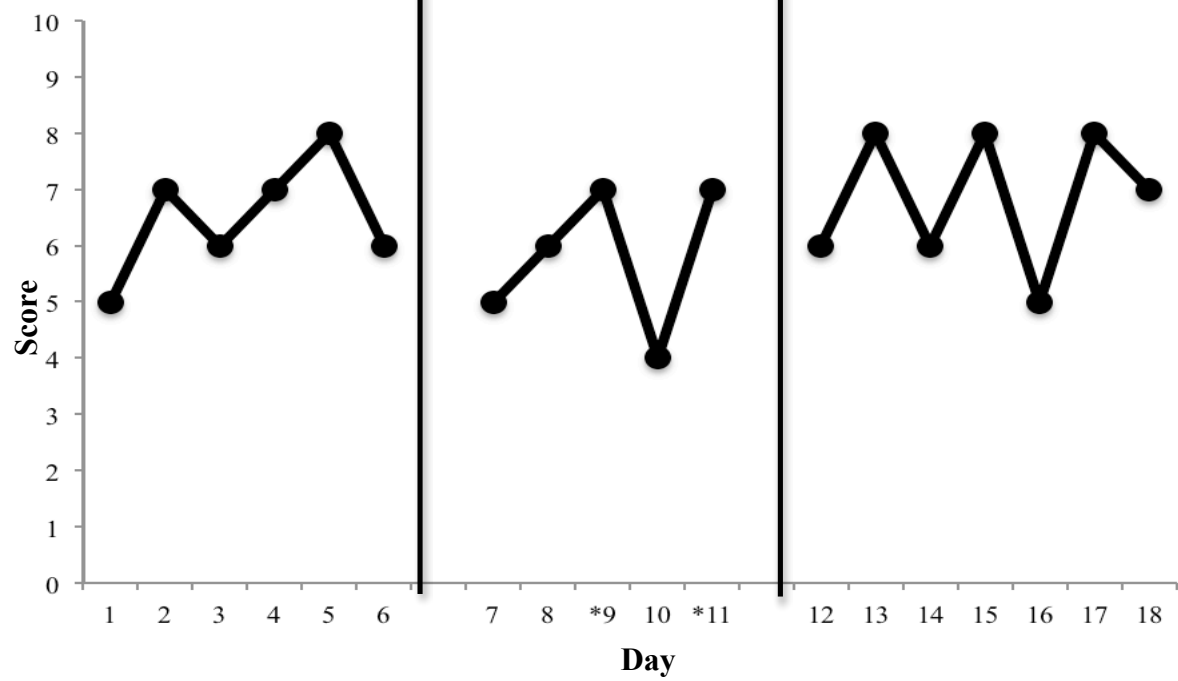
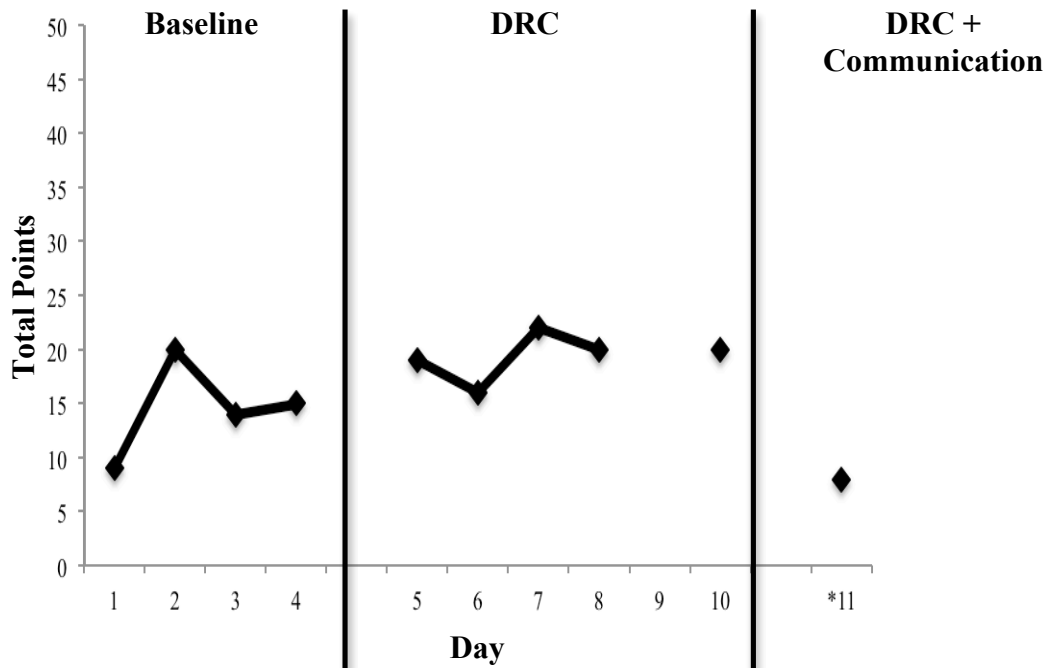


Figure 5 represents points received on the DRC for Student 2 and 3. Scores are presented as the daily point total received out of a possible 50 points across five behaviors and five class periods for both Student 2 and Student 3. Visual inspection of Student 2's baseline DRC scores indicated an initial low level with an increasing trend and limited variability. Following the implementation of the DRC, Student 2's DRC data remained at an overall low level. Data for Phase B also demonstrated no trend with limited variability. After the start of the communication condition, the available data point for Student 2 indicated a decrease in level, but again, this was a half-day for students and point totals were cut in half. Student 2's goal during Phase C was 22 and was subsequently 11 for the half-day; however, Student 2 did not meet his half-day goal. Visual inspection of Student 3's baseline DRC scores indicated an initial moderate level with a slight increasing trend and some variability. Following the implementation of the DRC, Student 3's score demonstrated an initial increase in level, but demonstrated a decreasing trend across the phase with some variability. However, Days 9 and 11 were half-days and Student 3's goal was cut in half with a goal of 14 points. Student 3 met his goal for both Day 9 and 11. After the introduction of the communication condition, Student 3's DRC data demonstrated an immediate change to a high level. Data in Phase C also demonstrated an increasing trend with some variability.

Figure 5

Daily Behavior Report Card

Student 2



Student 3

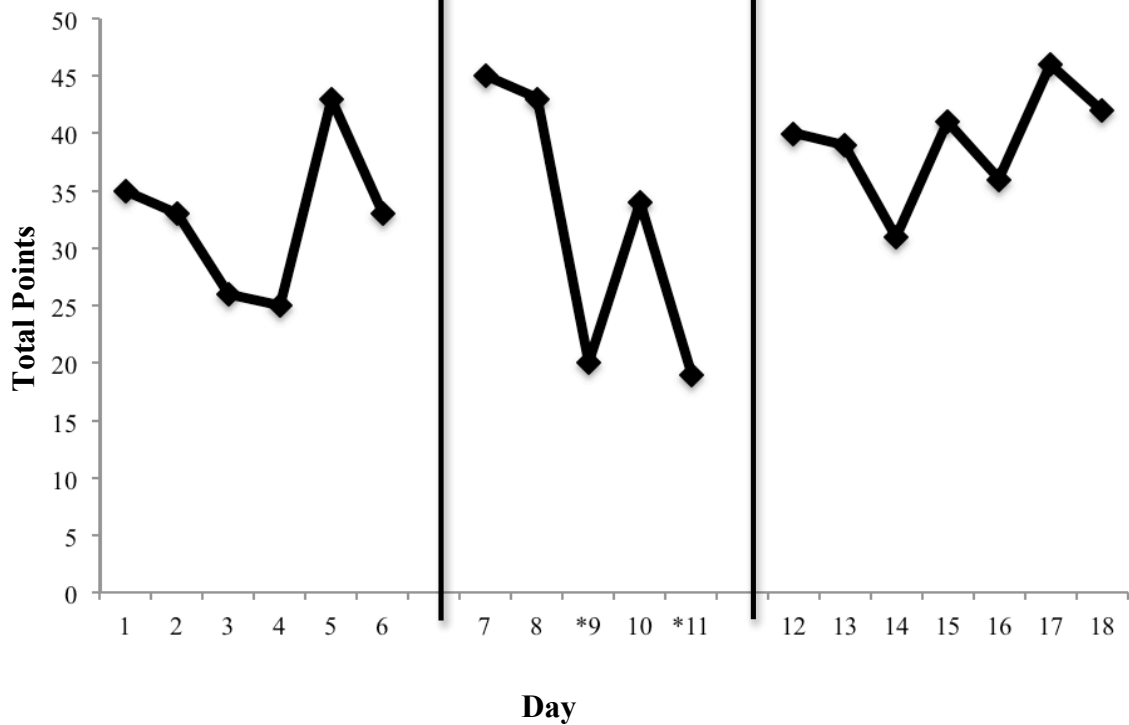
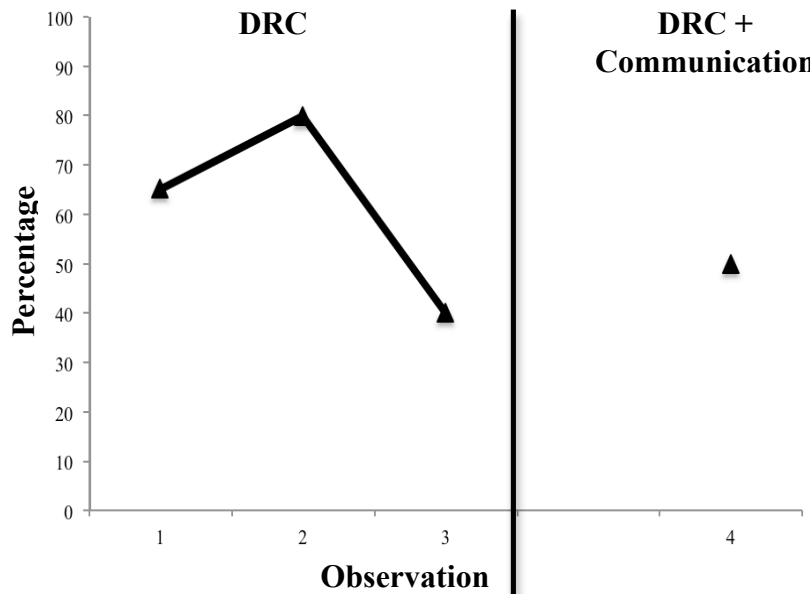


Figure 6 reflects teacher treatment integrity data collected during Phases B and C of the research design in which Phase B services as baseline. Scores are presented as the percentage of intervention steps completed as intended. Visual inspection of Teacher 2's data indicated that baseline reflects an initial moderate level with a decreasing trend and some variability. It should be noted that Student 2 reminded Teacher 2 about the DRC during the second day of observations, which suggests this score (80% of steps completed) may be an overrepresentation of Teacher 2's treatment integrity for that observation day. As a result, the phase change for Teacher 2 occurred following the three observations during Phase B even though this data point fell above the criteria for phase changes. Additionally, as noted above, Student 2 left the school district following the start of Phase C. The available data demonstrated a moderate level similar to that in Phase B, but due to the limited nature of the data trend and variability were unable to be examined using visual inspection. Visual inspection of Teacher 3's data indicated that baseline also reflects an initial moderate level. The data also demonstrated no trend and limited variability. Following the introduction of the communication condition, Teacher 3's demonstrated no change in level. Phase C also demonstrated an increase in variability with a slight increasing trend.

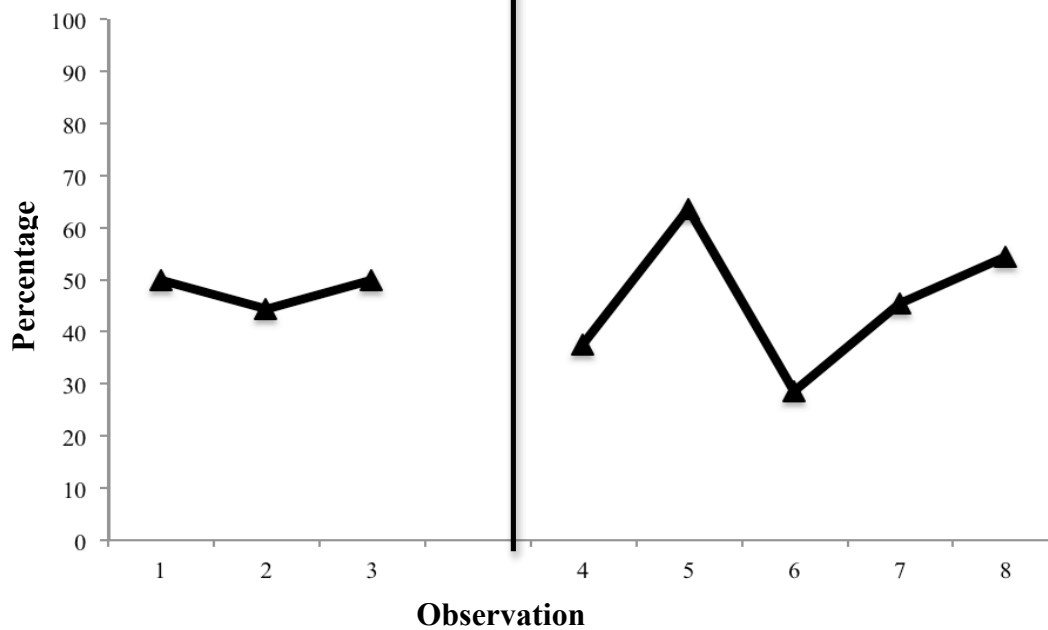
Figure 6

Teacher Treatment Integrity

Teacher 2



Teacher 3



Lastly, overall quality of implementation for the interventions was also assessed during the observations for Teacher 2 and 3. For Teacher 2, an average rating of 3.66 (3 = Slightly Disagree; 4 = Slightly Agree) was documented across three of the four observations throughout Phases B and C for quality of implementation. Overall quality of implementation was unable to be observed on the fourth observation due to the student getting suspended and leaving school early. For Teacher 3, an average rating of 4 was documented across all observations.

CHAPTER 4: DISCUSSION

The present research studies were designed to serve as a preliminary analysis of using communication between home and school in isolation as a means to improve low levels of treatment integrity for teachers. Due to limited data and limited ability to calculate IRD effect sizes, conclusions regarding the effect of home-school communication on teacher treatment integrity levels are restricted to the results of visual inspection. Overall, the results suggested limited to small effects on teacher treatment integrity. Treatment integrity levels for Teacher 1 demonstrated a small improvement upon implementation of the DRC plus communication phase (Phase C); however, levels for Teacher 2 and 3 demonstrated no significant changes in percentage. Overall, percentage of steps completed for Teacher 1 mostly fell at or below 80 percent while levels for Teacher 2 and 3 mostly fell between 30 and 70 percent of steps completed, which suggests that in isolation, home-school communication may not be enough to ensure high levels of treatment integrity and additional methods of performance feedback may be necessary to facilitate proper treatment implementation. While the communication component of the DRC is essentially a type of performance feedback regarding a student's response to the intervention, it does not appear to be enough to encourage proper implementation of the intervention. Although the present data and analysis are limited, findings do provide some indication of limited effectiveness. Methods to consider using in conjunction with home-school communication might include formative verbal and graphic performance feedback regarding treatment implementation, which research has demonstrated to be effective in promoting implementation fidelity (Sanetti et al., 2007; Witt et al., 1997). Relatedly, recent research on the Classroom Check-Up model suggests it has utility in supporting implementation for evidence-based interventions (Reinke et al., 2012; Reinke, Lewis-Palmer, & Merral, 2008).

Notably, the Classroom Check-Up model (CCU; Reinke, Herman, & Sprick, 2011) combines verbal and graphic performance feedback with motivational interviewing tactics. CCU is a classwide consultation model that supports not only classroom management strategies, but also the treatment integrity of those strategies. In their 2008 study, Reinke, Lewis-Palmer, and Merrall, found that the CCU model plus visual performance feedback was effective in increasing teacher treatment integrity of classroom management strategies, which included increased use of praise, increased use of behavior-specific praise, and a decrease in reprimands. Considering these findings, the CCU may be particularly useful in supporting the implementation of the DRC, which is heavily focused on praise and positive reinforcement.

While the primary focus of the present research studies was on teacher treatment integrity, the method by which this was considered was through the implementation of DRCs to target student academic engagement. Results indicated that teacher treatment integrity might have influenced the effectiveness of the intervention in improving student engagement levels. Although teacher treatment integrity was somewhat consistent across phases, percentage of intervention steps completed fell at a low to moderate level for all teachers. Student engagement levels as rated by the DBRs for Student 1 improved from an initial low level to a moderate level upon implementation of the DRC while DBR levels for Student 2 and 3 consistently fell at an overall moderate level. For Student 1, this suggests that the DRC was somewhat effective in improving the student's level of engagement during carpet time, but not effective enough to facilitate high levels of student engagement for not only carpet time, but throughout the entire school day as well. Student 1's DRC obtained scores demonstrated some improvement in the DRC only phase, but returned to levels similar to baseline in the DRC plus communication phase. Data for Student 2 and 3 demonstrated similar differences between DBR and DRC

ratings. Student 2 demonstrated some improvement during independent work as rated by the DBRs, but his overall scores on the DRC remained relatively consistent at a low level. Student 3's DRC data indicated some improvement in overall academic engagement, but ratings during ELA instruction using the DBRs remained a consistent moderate level.

Furthermore, student ratings on the DRC regarding specific engagement behaviors may have demonstrated some improvement between phases, but the data also generally reflected increased levels of variability. Following baseline, initial points goals were established at school based on baseline levels, as this would ensure the students were capable of easily obtaining the goal. Overall, the students were able to meet their goals consistently throughout Phases B and C of the research design. However, there was also some variability among Student 1's daily performance in Phase B and a decrease in point totals in Phase C, which were closer to baseline levels, but still above the expected goal of 10 points. Additionally, Student 3's data demonstrated variability across phases, but he consistently met his daily point goals. Reasons for limited effectiveness could be due to the intervention itself, but it could also be due to teacher treatment integrity. The length of the intervention may have affected its success. The limited nature of the intervention prevented any additional increase in student point goals, which may have hindered the improvement of student behavior. The intervention itself may also be an issue due to the lack of a functional analysis or preference assessment. The DRC intervention is centered on positive reinforcement and without an assessment as to how a student responds to the reinforcement, it is uncertain if it is the appropriate method for improving student behavior. Conversely, low to moderate levels of teacher treatment integrity could have played a significant role in influencing student outcomes considering the relationship between treatment integrity and

treatment effectiveness, which further stresses the importance of adequate treatment integrity in supporting positive outcomes for students.

More specifically in regards to teacher treatment integrity, the teachers continuously omitted several intervention steps throughout treatment implementation at school. These include discussing the DRC with the student at the beginning of each day and following each specified time period, praising the student for correct self-evaluation, praising the student for engaging in appropriate behavior, and providing the student with corrective feedback. A large component of the DRC is the use of positive reinforcement and praise. It is the basis for the intervention and is the driving force in improving student behavior (Volpe & Fabiano, 2013). Omission of praise-based steps could have significantly influenced the effectiveness of the intervention considering the necessity of these steps to the intervention itself and the relationship between treatment integrity and effectiveness. Moreover, consistent ratings of Slightly Agree (a rating of 4) on teacher quality of implementation demonstrate that the teachers implemented the reward component with only some enthusiasm. A rating of 4 suggests the teacher used some positive affect and praise to reward and reinforce the students for meeting his daily behavior goal on the DRC, but it also might indicate that additional praise and positive affect were necessary for proper implementation. The consistency with which the teachers omitted intervention steps further suggests the need for additional performance feedback components to promote proper treatment implementation. This may be where the CCU model could be useful in supporting the implementation of the DRC intervention. As used in these studies, the DRC contained 11 intervention steps. The CCU would allow a coach to observe these steps and determine areas of strength (i.e., steps implemented as intended), areas needing some improvement (i.e., steps inconsistently omitted), and areas needing immediate attention (i.e., steps consistently omitted).

Following the creation of the menu options of intervention steps needing support, the coach and teacher would establish an action plan of how to address the chosen area of need and the coach would use behavioral coaching strategies such as modeling and feedback to support the implementation of the steps within the classroom (Reinke et al., 2011). The steps that are particularly important for the DRC are the praise-based steps. Given the success of the CCU model in improving not only integrity levels, but also the use of praise and behavior-specific praise (Reinke et al., 2008), the CCU model may be an important consideration in the supporting the implementation of the DRC and other praise-based interventions.

Limitations

Several limitations of the present study are evident. Due to scheduling and assessment difficulties, parental data for Study 1 were unable to be analyzed. Therefore it was not possible to include a secondary consideration of the influence of communication between home and school on parental treatment integrity. Through consultation with the student's teacher, it was discovered that transportation to the school for initial meetings would be an area of concern. As a result, it was decided that phone conferences would be the mode of communication between the researcher and the parent participant. This could have affected the success of training due to the limited nature of the phone conferences, lack of direct contact, and inability to provide a demonstration of proper procedures. However, the researcher provided the parent with a list of instructions detailing each procedure and phase of the research design. The researcher reviewed these with the parent during two phone conferences and the researcher had constant contact with the parent throughout the data collection process. Due to the difficulties encountered during Study 1, parent participants were not included in Study 2 and focused remained on the primary research question of the influence of home-school communication on teacher treatment integrity.

Other limitations to the present studies should also be noted. Student behavior was based solely on teacher ratings. It would be more defensible to include direct observations of student behavior. This would reduce potential rater bias and would require less inference, which could help ensure accurate behavior ratings. Additionally, inter-rater reliability estimates were not obtained for teacher ratings of student behavior. Furthermore, the limited data and inability to appropriately calculate IRD effect sizes creates a need for caution in interpreting the data and also stresses the need for replications and further analysis. Lastly, phase changes occurred based on teacher treatment integrity levels and as a result, phase changes occurred when student outcome data was decreasing or increasing, which also limits the internal validity of the present studies.

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APPENDIX A: INSTITUTIONAL REVIEW BOARD APPROVAL



EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building · Mail Stop 682
600 Moyer Boulevard · Greenville, NC 27834
Office 252-744-2914 · Fax 252-744-2284 · www.ecu.edu/irb

Notification of Exempt Certification

From: Social/Behavioral IRB
To: [Jessica Nerverve](#)
CC: [Stephen Kilgus](#)
Date: 4/17/2013
Re: [UMCIRB 13-000585](#)
The Effect of Home-School Communication on Treatment Integrity

I am pleased to inform you that your research submission has been certified as exempt on 4/15/2013. This study is eligible for Exempt Certification under category #1.

It is your responsibility to ensure that this research is conducted in the manner reported in your application and/or protocol, as well as being consistent with the ethical principles of the Belmont Report and your profession.

This research study does not require any additional interaction with the UMCIRB unless there are proposed changes to this study. Any change, prior to implementing that change, must be submitted to the UMCIRB for review and approval. The UMCIRB will determine if the change impacts the eligibility of the research for exempt status. If more substantive review is required, you will be notified within five business days.

The UMCIRB office will hold your exemption application for a period of five years from the date of this letter. If you wish to continue this protocol beyond this period, you will need to submit an Exemption Certification request at least 30 days before the end of the five year period.

The Chairperson (or designee) does not have a potential for conflict of interest on this study.



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Notification of Amendment Approval

From: Social/Behavioral IRB
To: [Jessica Nerverve](#)
CC: [Stephen Kilgus](#)
Date: 12/2/2013
Re: [Ame1_UMCIRB 13-000585](#)
[UMCIRB 13-000585](#)
The Effect of Home-School Communication on Treatment Integrity

Your Amendment has been reviewed and approved using expedited review on 12/2/2013. It was the determination of the UMCIRB Chairperson (or designee) that this revision does not impact the overall risk/benefit ratio of the study and is appropriate for the population and procedures proposed.

Please note that any further changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. A continuing or final review must be submitted to the UMCIRB prior to the date of study expiration. The investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Document	Description
Changes are being made to the study's location to include Scotland County Schools.	

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

APPENDIX B: FORMS

Interventionist Questions – Parent Form

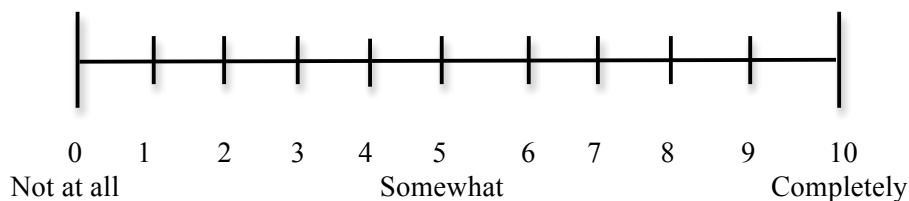
Interventionist Adherence

Today, did you...

	Yes	No	No Opp.
Discuss the Daily Behavior Report Card with your child at the beginning of homework?			
Observe your child's behavior during homework?			
Document the percent of time your child was engaged immediately following the observation?			
Discuss your child's behavior following the completion of homework?			
Praise your child for correct self-evaluation of behavior?			
Praise your child for engaging in appropriate behavior?			
Provide your child corrective feedback for inappropriate behavior?			
Send the Daily Behavior Report Card back to school with the child?			
Determine if your child's goal was met?			
Provide reinforcement/reward for met goal?			
TOTAL POINTS			

Interventionist Competence

I understand the procedures that are involved with the Daily Behavior Report Card intervention.



Quality of Implementation

Today, I implemented the Daily Behavior Report Card reinforcement enthusiastically.

1	2	3	4	5	6
Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree

Interventionist Questions – Teacher Form

Interventionist Adherence

Today, did the teacher...

	Yes	No	No Opp.
Discuss the Daily Behavior Report Card with the student at the beginning of the day?			
Observe the student's behavior during each specified time period?			
Document the percent of time the student was academically engaged immediately following each observation?			
Discuss ratings with the student following each period?			
Discuss ratings with the student's behavior at the end of the school day?			
Praise the student for correct self-evaluation of behavior?			
Praise the student for engaging in appropriate behavior?			
Provide the student corrective feedback for inappropriate behavior?			
Send the Daily Behavior Report Card home with the student?			
Determine if student's goal was met?			
Provide reinforcement/reward for met goal?			
TOTAL POINTS			

Quality of Implementation

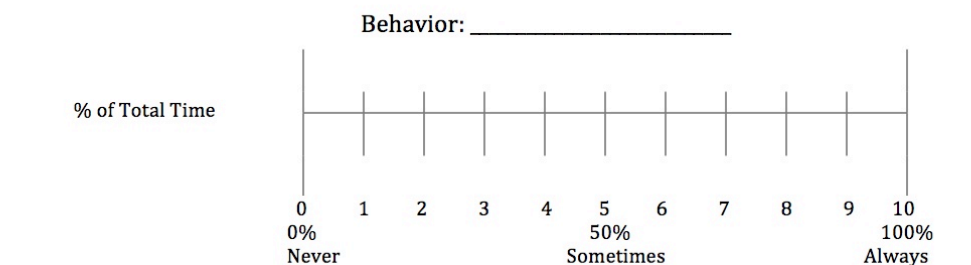
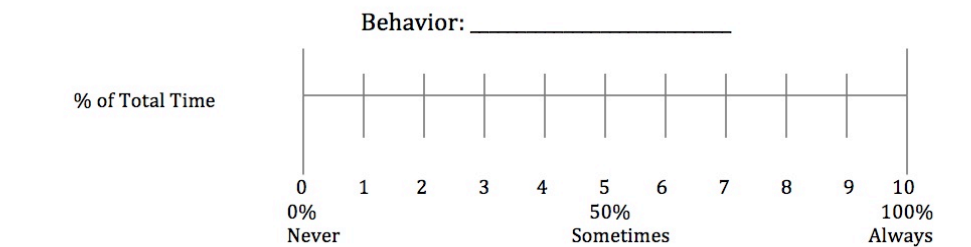
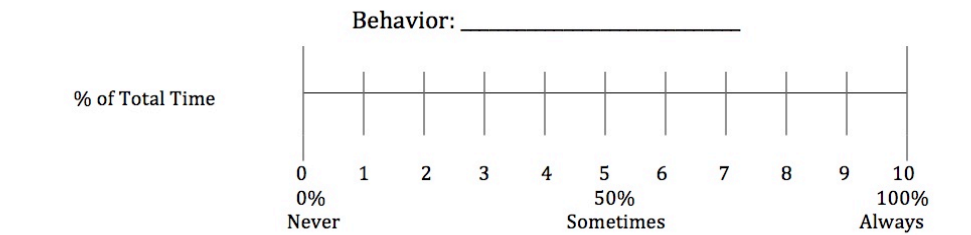
Today, the teacher implemented the Daily Behavior Report Card reinforcement enthusiastically.

1	2	3	4	5	6
Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree

Direct Behavior Rating (DBR) Form – Fill-in Behaviors

Date: M T W Th F	Student: _____ Rater: _____	Activity Description:
Observation Time: Start: _____ End: _____ <input type="checkbox"/> Check if no observation today	Behavior Descriptions: <p>Academically engaged is actively or passively participating in the activity. For example: writing, raising hand, answering a question, talking about the activity, listening, reading silently, or looking at instructional materials.</p>	

Directions: Place a mark along the line that best reflects the percentage of total time the student exhibited each target behavior. Note that the percentages do not need to total 100% across behaviors because some behaviors may co-vary. If desired, an additional behavior may be defined and rated.



V1.3 DBR Standard Form – Fill-in Behaviors was created by Sandra M. Chafouleas, T. Chris Riley-Tillman & Theodore J. Christ.
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 Downloadable from www.directbehaviorratings.org.

Daily Behavior Report Card: Parent 1 Form

Date: _____

Student: _____

Parent: _____

Key: 0 = did not demonstrate skill

1 = partial demonstration of skill

2 = full demonstration of skill

Desired Behaviors	Homework
1. Kept attention on the assignments or activity	0 1 2
2. Listened to others	0 1 2
3. Participated in the activity	0 1 2
4. Engaged in conversation related to the activity	0 1 2

Total Points: _____

Goal: _____

Goal Met: Y / N

Reward Chosen: _____

Teacher Signature: _____

Parent Signature: _____

Daily Behavior Report Card: Teacher 1 Form

Date: _____

Student: _____

Teacher: _____

Key: 0 = did not demonstrate skill

1 = partial demonstration of skill

2 = full demonstration of skill

Desired Behaviors	8-8:30	8:30-9:50	10:40-11:20	12-12:45	12:45-1:40	2:10-2:40
1. Raised hand to talk	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
2. Talked only about classroom activities	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
3. Listened during classroom activities	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
4. Kept eyes on class materials during assignments and activities	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2

Total Points: _____

Goal: _____

Goal Met: Y / N

Reward Chosen: _____

Teacher Signature: _____

Parent Signature: _____

Daily Behavior Report Card: Teacher 2 Form

Date: _____ Student Student 2 Teacher: Teacher 2

Key: 0 = did not demonstrate skill 1 = partial demonstration of skill 2 = full demonstration of skill

Desired Behaviors	Spelling/ Writing 8:00-8:45	Daily 5/ Phonics 8:45-10:00	Remediation/ Shared Writing 10:00-10:20	Read Aloud 11:30-11:50	Fast Forward/ Math 12:30-2:20
1. Stayed in seat	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
2. Raised hand to talk	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
3. Talked only about classroom activities	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
4. Listened during classroom activities	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
5. Kept eyes on class materials during assignments and activities	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2

Total Points: _____

Goal: _____

Goal Met: Y / N

Reward Chosen: _____

Teacher Signature: _____

Parent Signature: _____

Daily Behavior Report Card: Teacher 3 Form

Date: _____

Student: Student 3

Teacher: Teacher 3

Key: 0 = did not demonstrate skill

1 = partial demonstration of skill

2 = full demonstration of skill

Desired Behaviors	AR 8:00-8:50	Reading 8:50-10:30	Specials 10:30-11:10	Math 12:30-2:00	Science 2:00-2:50
1. Wrote down assignments and activities	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
2. Raised hand to talk	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
3. Talked only about classroom activities	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
4. Listened during classroom activities	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2
5. Kept eyes on class materials during assignments and activities	0 1 2	0 1 2	0 1 2	0 1 2	0 1 2

Total Points: _____

Goal: _____

Goal Met: Y / N

Reward Chosen: _____

Teacher Signature: _____

Parent Signature: _____

